Section 4: River Pollution Issues

There are various types of pollution that plague our nation's waterways. The following is a basic list of pollutants that can be found in the rivers environment:

- Marine Debris (Trash)
- Oil spills
- Hazardous materials spills
- Sewage
- Nutrients

River Partners team members should fully research each pollution topic as it applies to the local area where you are providing awareness training.

River Debris (garbage)

Debris in the water is more than just a visual pollutant. It poses serious hazards for many users of the river as well as wildlife.

Beach debris

Debris, often called litter, has become a significant problem along the shorelines of rivers and lakes. Debris is defined as any man-made, solid material that enters our waterways by dumping or littering and then is washed out to sea via rivers, streams, storm drains, etc.

Objects ranging from detergent bottles, hazardous medical wastes, and discarded fishing line all qualify as debris. In addition to being unsightly, it poses a serious threat to everything with which it comes into contact.

Plastic six-pack can holder caught on the neck of a bird.

There are two different sources from which debris pollutes our rivers. The first is from the land and includes users of beaches,

storm water-runoff, landfills, solid waste, floating structures, ill maintained garbage bins and dumps and people who are careless litterbugs.

Debris also comes from combined sewer overflows and storm drains. Typical debris from these sources includes street litter and sewage. Land-based sources cause a high percentage of the debris found in our waters.

The second source of debris is from vessels operating on the rivers. This type of debris includes galley waste and other trash that is either inadvertently or, in some cases, intentionally discarded into the river.

Debris is comprised of paper, plastics and many other discarded items. Of all the debris found in the rivers environment, plastic is particularly hazardous to animals because it does not breakdown rapidly in the water and can remain afloat in the water for long periods of time. If ingested by animals it can cause serious internal problems and even death. In other instances, animals can become entangled in plastics, and if severely entangled may die from drowning, starvation, or strangulation.

Debris can also depress local economies. Litter accumulates on the shores of our rivers and lakes causing an unappealing blemish that can severely affect tourism.

Petroleum Products (Oil/Fuel Spills)

Oil spills can severely impact water quality, wildlife, and their habitats as well as the local economies.

Oil contains toxic hydrocarbons and heavy metals that can be deadly to marine life in very small quantities. Refined products such as motor oil and gasoline are more toxic than crude oils because they are soluble in water (and difficult to remove once in the water), disperse more readily into the water, and are more easily absorbed by an organism's soft tissues.

Apart from being carcinogenic, petroleum products reduce light penetration and the exchange of oxygen at the water's surface. Petroleum products also contain toxic elements and metals. Gasoline contains more than 100 hydrocarbon compounds as well as lead. Oil contains zinc, sulfur, and phosphorus.

Sources of petroleum products in the rivers vary. Along the river system, storm drains are a major source of oil pollution because of street runoff, and many communities have little ability to prevent or monitor this runoff. Small fuel spills around marinas and boat fueling docks are a persistent problem in some areas, and in many cases go unreported.

Hazardous Materials (chemicals)

Chemical spills from commercial transportation accidents or incidental discharge pose a potential and significant risk to public health and well-being. Detergents, varnish, paint and chemical products used to keep boats in top shape often can endanger human health and the environment as well.

There are many sources of hazardous material pollution in our rivers. In addition to point sources such as industrial waste, a great deal of water pollution comes from non-point sources such as agricultural runoff, and storm-water drainage.

Toxic substances are chemicals or compounds that may present an unreasonable threat to human health and the environment. Human exposure to toxic substances can cause a variety of health effects, including damage to the nervous system, reproductive and developmental problems, cancer, and genetic disorders or other birth related defects.

Sewage

Human or animal waste contains nutrients that can unnaturally stimulate algae growth and deplete the amount of oxygen in the water. The primary concern about sewage in the water is its potential for carrying disease-causing agents such as bacterium and fungus.

The potential illnesses caused by sewage pollution include hepatitis, typhoid, cholera, and gastroenteritis. An indicator used to detect the presence of sewage pollution is a type of bacteria called fecal coliform. While all mammals and birds have this bacterium, fecal coliform found in water can be an indicator of the presence of human waste and the potential harm for disease.

A fecal coliform bacteria count of 14 per 100 milliliters of water requires the closing of shellfish beds. A count of 200 fecal coliform bacterial per 100 milliliters of water closes beaches to swimming and other primary recreation, which can hurt tourism and deteriorate the quality of life for all of us.

Untreated sewage and other nutrient loading in a water body can come from various land-based sources including faulty residential, municipal, or marina septic treatment systems, poor farming management practices, or direct discharges from shoreside facilities and boats.

Consequently, discharge of raw sewage from a vessel within the three-mile limit of U.S. territorial waters is illegal.

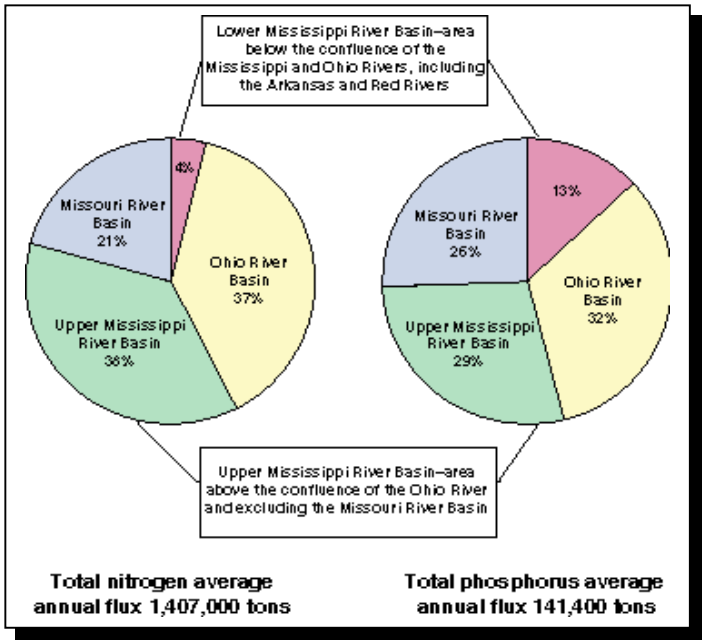
Source: Environmental Protection Agency

Nutrients

The Mississippi River Basin contains one of the most productive farming regions in the world and produces the majority of the corn, soybeans, wheat, cattle, and hogs, as well as a significant amount of the cotton and rice grown in the United States.

In addition, the majority of all pesticides and fertilizers used in the United States are applied to cropland in the Mississippi River Basin. As a result of rainfall runoff and groundwater discharge, streams in the Mississippi River Basin carry suspended sediment, naturally occurring chemicals weathered from the soil, and contaminants from human activities.

These streams, and much of the dissolved and suspended material in them, eventually flow into the Mississippi River and ultimately are discharged to the Gulf of Mexico. The water quality of the Mississippi River and its tributaries is an important regional and national issue. The land use and cultural changes that have occurred in the Mississippi River Basin in the 1900's have had measurable effects on the quality of water in the Mississippi River Basin.



Because changes in land use and water quality likely will continue to occur in the Mississippi River Basin as agriculture production increases in response to the growing worldwide demand for food and fiber, it is important that a long-term program of monitoring, data analysis, interpretation, and reporting be implemented for the Mississippi River Basin.

The following two pages is a fact sheet discussing the issue of Hypoxia in the Gulf of Mexico, which is caused by the nutrient load in the Mississippi River.